

UNIVERSITY SYLLABUS

UNIT I

Preliminary Concepts: Reasons for studying, concepts of programming languages, Programming domains, Language Evaluation Criteria, influences on Language design, Language categories, Programming Paradigms – Imperative, Object Oriented, functional Programming , Logic Programming. Programming Language Implementation – Compilation and Virtual Machines, programming environments.

UNIT II

Syntax and Semantics: general Problem of describing Syntax and Semantics, formal methods of describing syntax - BNF, EBNF for common programming languages features, parse trees, ambiguous grammars, attribute grammars, denotational semantics and axiomatic semantics for common programming language features.

UNIT II

Data types: Introduction, primitive, character, user defined, array, associative, record, union, pointer and reference types, design and implementation uses related to these types. Names, Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization.

UNIT IV

Expressions and Statements: Arithmetic relational and Boolean expressions, Short circuit evaluation mixed mode assignment, Assignment Statements, Control Structures – Statement Level, Compound Statements, Selection, Iteration, Unconditional Statements, guarded commands.

UNIT V

Subprograms and Blocks: Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Design issues of subprograms and operations, local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs, parameters that are sub-program names, design issues for functions user defined overloaded operators, co routines.

UNIT VI

Abstract Data types: Abstractions and encapsulation, introductions to data abstraction, design issues, language examples, C++ parameterized ADT, object oriented programming in small talk, C++, Java, C#, Ada 95 Concurrency: Subprogram level concurrency, semaphores, monitors, message passing, Java threads, C# threads.

UNIT VII

Exception handling: Exceptions, exception Propagation, Exception handler in Ada, C++ and Java.

Logic Programming Language: Introduction and overview of logic programming, basic elements of prolog, application of logic programming.

UNIT VIII

Functional Programming Languages: Introduction, fundamentals of FPL, LISP, ML, Haskell, application of Functional Programming Languages and comparison of functional and imperative Languages.

Scripting Language: Pragmatics, Key Concepts, Case Study: Python-Values and Types, Variables, Storage and Control, Binding and Scope, Procedural Abstraction, Data Abstraction, Separate Compilation, Module Library.

GATE SYLLABUS

Functions, Recursion, Parameter passing, Scope, Binding; Abstract data types, Arrays.

IES/CSIR SYLLABUS

Data types, Expressions and Statements, Abstract Data Types, Exception Handling.

TEXT BOOKS

T1: Concepts of Programming Languages Robert.W.Sebesta 8/e, Pearson Education, 2008

T2: Programming Languages –Louden, Second Edition, Thomson.

REFERENCE BOOKS

R1: Programming languages –Ghezzi, 3/e, John Wiley

R2: Programming Languages Design and Implementation – Pratt and Zelkowitz, Fourth Edition PHI/Pearson Education

R3: Programming languages –Watt, Wiley Dreamtech

R4: LISP Patric Henry Winston and Paul Horn Pearson Education.

R5: Programming in PROLOG Clocksin, Springer

R6: Core Python Programming, Chun, II Edition, Pearson Education, 2007

R7: Guide to Programming with Python, Michael Dawson, Thomson, 2008

INTERNATIONAL JOURNALS

1. Bulletin of the IGPL (Interest Group in Pure and Applied Logics)
2. The Chicago Journal of Theoretical Computer Science
3. The The Journal of Forth Application and Research
4. The Journal of Functional Programming (Cambridge University Press)
5. The Journal of Functional and Logic Programming (MIT Press)
6. The Journal of the Interest Group in Pure and Applied Logics (IGPL)
7. The Journal of Symbolic Computation
8. Logic in Computer Science (LICS) Newsletter Archive
9. Logic Programming Newsletter Archive
10. Theoretical Computer Science (Elsevier)
11. Theory and Applications of Categories

NATIONAL

1. CSI Communications
2. IETE Technical Journal

WEBSITES

1. www.learnerstv.com/Free-Computers-Video-lectures-ltv061-Page1.htm
2. freevideolectures.com › Computer Science › IIT Madras
3. www.ocw.mit.edu